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GB 623670
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(54) An adjustable hinge for doors and windows

(57) A hinge for adjustably attaching a door or window to a frame of the kind having a first hinge part 1 to be connected to the door or window 14, a second hinge part 3 to be connected to the frame 15, and an insertable pin 33 forming the hinge pivot axis, is characterised in that both the first hinge part 1 and the second hinge part 3 have adjustment means for adjusting the position of the door or window relative to its frame.

Preferably, the first hinge part 1 has a supporting pin 5 with a thread, and the head 8 of the pin 5 rotatably engages in a through-bore extending through a holder 2 transverse to the pivot axes of the hinge, the head of the pin has an internal hexagonal recess 7, or a screw-slot, by which the pin can be rotated by means of a tool for the purpose of adjusting the position, and a tapped bore extends coaxially with the pivot axis of the hinge which accommodates a locking screw 11 for securing the position of the supporting pin 5 relative to the pin holder.

The invention provides a hinge with which, after mounting, smooth adjustment of the position of a door or window in its frame is possible in any easy manner, and without the need to take the door or window off its hinges.

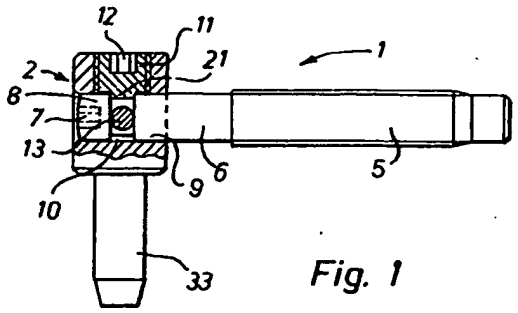

Fig. 1

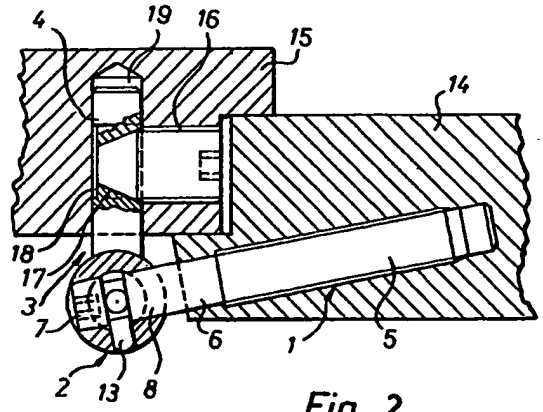

Fig. 2

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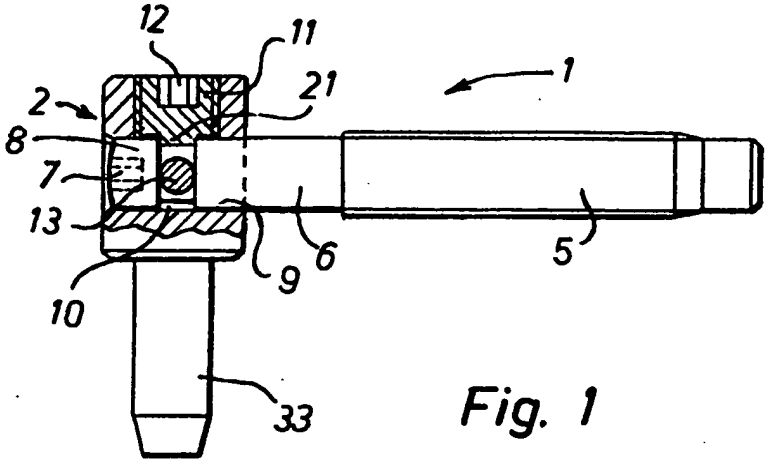

Fig. 1

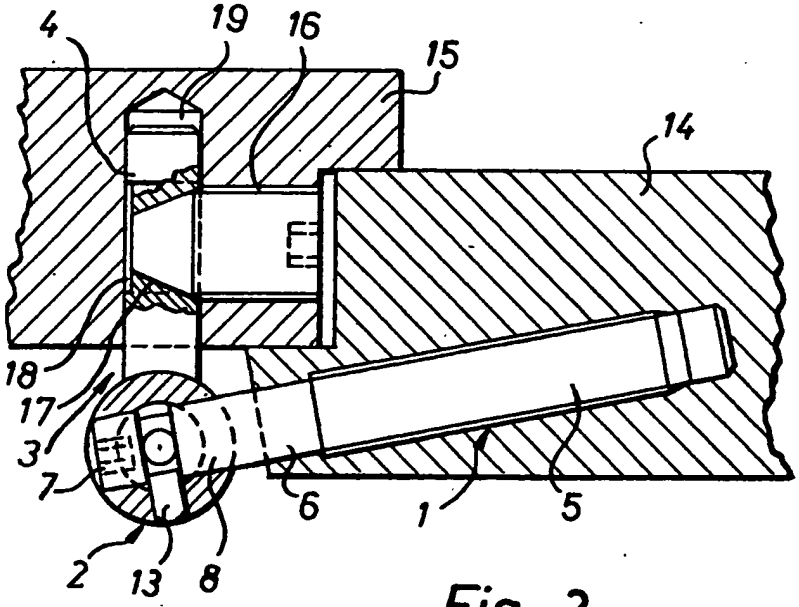

Fig. 2

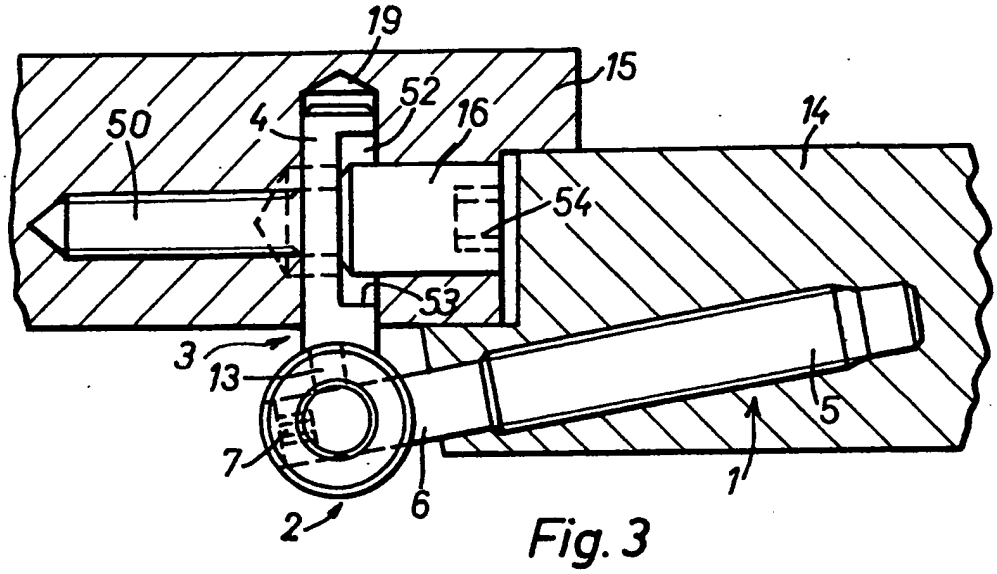

Fig. 3

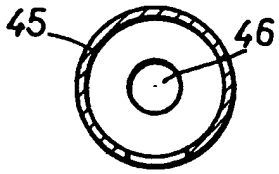

Fig. 4

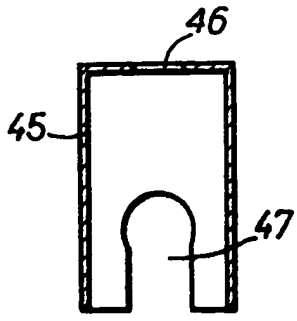

Fig. 5

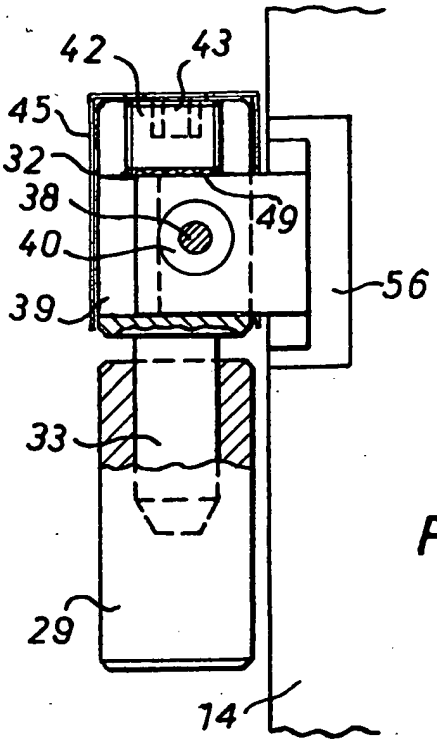
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Fig. 6

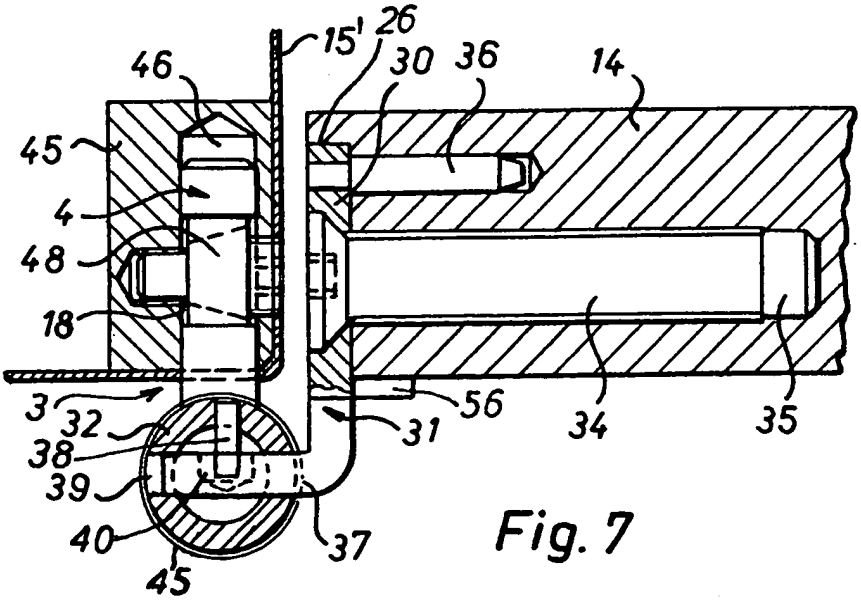
15'
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Fig. 7

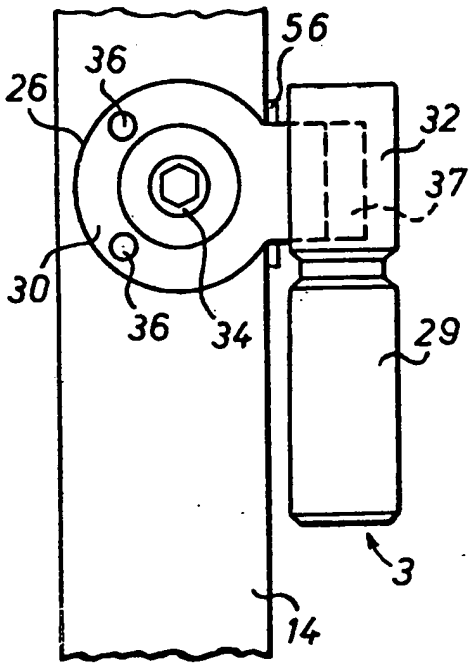
56
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Fig.8

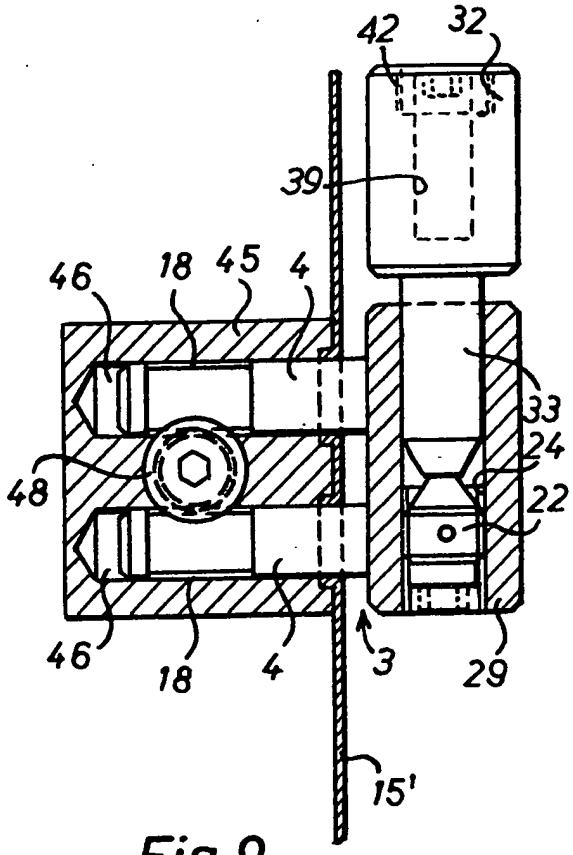
42
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Fig.9

SPECIFICATION

An adjustable hinge for doors and windows

The invention relates to a hinge for adjustably attaching a door or window to a frame, said hinge being of the kind having a first hinge part to be connected to the door or window, a second hinge part to be connected to the frame, and an insertable pin forming the hinge pivot axis.

With door or window hinges there is a need to be able to adjust the position of the door or window relative to the surrounding frame easily after mounting.

An object of the invention is to provide a hinge with which, after mounting, smooth adjustment of the position of a door or window in its frame is possible in an easy manner.

According to the invention a hinge of the kind referred to is distinguished by the characteristic features set out in Patents Claim 1.

Thus, in accordance with the invention, a smooth positional adjustment after mounting of the door or window hinge plate is made possible in a particularly simple way, without the need to take the door or window off its hinges.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a view of the upper hinge part which is to be connected to a door or window.

Figure 2 is a horizontal section through the hinge which has been screwed into a wooden door with an overlap and a wooden frame.

Figure 3 is a horizontal section through a modified version as shown in Figure 2.

Figure 4 is a cross-section through a sleeve which can be pushed over the upper hinge part.

Figure 5 is a longitudinal section through the sleeve shown in Figure 4.

Figure 6 is a vertical section through an embodiment with a bent-away tang which engages in a slot.

Figure 7 is a horizontal section through the embodiment shown in Figure 6.

Figure 8 is a view of the embodiment shown in Figure 7 looking towards the narrow edge of the door.

Figure 9 is a vertical section through the lower hinge part which engages in the frame, in the embodiment shown in Figure 6—8.

The hinge shown in Figures 1 and 2 is used for subsequent positional adjustment of doors or windows in the mounted state. A supporting pin 5 in a first upper hinge part 1 is screwed into a slanting horizontal bore in a door 14 which is preferably made of wood or the like. The thread on this supporting pin 5 may be either a normal screw-thread or a self-tapping thread. There is a cylindrical section 6 without a thread adjoining the front and the rear of the threaded part of this supporting pin 5. This supporting pin 5 engages via its cylindrical head section 8 in a through-bore 9 in a cylindrical pin holder 2 which is integral with an insertable pin 3 which projects downwards. The bore extending transverse to the vertical axis of the pin holder 2 and the head section 8 are mutually dimensioned so that they engage in each other virtually without play but so that they can rotate easily.

To fix the relative position between the supporting pin 5 and the cylindrical pin holder 2 there is a locking screw 11 which is screwed from the upper end into a tapped bore, coaxially with the insertable pin 3. This locking screw 11 engages via a projecting cylindrical pin part 21 in an annular groove 10 in the head section 8. By tightening this locking screw 11 with the aid of a tool engaging in the internal hexagonal opening 12 the supporting pin 5 can therefore be secured in the axial direction and against rotation relative to the head section 8. In order to ensure that the supporting pin 5 is prevented from falling out of the bore 9 under the weight of the hung door 14, if the locking screw 11 should be inadvertently loosened sufficiently far for its pin 21 to come out of the annular groove 10, in the head section 8 there is a securing pin 13 which is inserted in a position offset, preferably by 90°, relative to the bore 9 and engages constantly in the annular groove 10 without the rotating ability of the supporting pin 5 being impeded thereby.

However, there is no need for the securing pin 13 if the locking screw 11 is prevented from becoming unscrewed, for example, by means of a force-fitted sleeve 45 as shown in Figures 4 and 5, so that only a limited amount of space for movement remains, within which the pin 21 stays engaged in the annular groove 10.

The lower hinge part 3 which engages in the frame 15 contains two threadless, cylindrical bearing pins 4 which are disposed spaced out one above the other and engage in cylindrical bores 19 in the frame 15 which is preferably made of wood. These two bearing pins 4 are spread apart by a screw 16 which engages between them and are thereby clamped firmly in the bores 19. The screw 16 is screwed in from the narrow edge of the frame 15 and presses against the two bearing pins 4 via its leading cone 17. In order to prevent these bearing pins 4 from falling out if the screw 16 should work loose or the bores 19 should become wider, each of these two bearing pins 4 is equipped with a cylindrical recess 18 extending in the longitudinal direction and reducing the diameter, against which the cone 17 comes to rest. If loosening should occur, the bearing pins 4 can thus only be displaced up to the shoulder at the transition to the full diameter of the bearing pins 4 so that this lower hinge part is prevented from falling out of the frame 15 under the weight of the door.

Figure 3 shows an embodiment of a hinge in which the first hinge part 1 corresponds to that shown in Figures 1 and 2. The second hinge part 3 which engages in the wooden frame 15 again contains two parallel threadless cylindrical bearing pins 4 which are both provided with a flat base recess 52. This recess 52, preferably produced by a milling operation, extends over only part of the length of the bearing pin 4, so that shoulders 53

are formed at both ends. The screw 16 contains a threaded section 50 and a larger-diameter cylindrical head section which engages in the recess 52 and effects the clamping of the bearing pins 4 in the bores 19 when tightening is carried out with the aid of a tool which engages in the internal hexagonal opening 54. The difference between the greater length of the recess 52 compared with the diameter of the head of the screw 16 determines the adjustment range for possible positional adjustment of the second hinge part 3. The length of the threaded section 50 corresponds approximately to the length of the bearing pins 4.

Moreover, as shown in Figures 4 and 5, a thin-walled sleeve 45 may be pushed on over the pin holder 2. The slit 47 in this engages over the supporting pin 5. An opening 46 is provided in the end wall of the sleeve, for access to the locking screw 11.

Figures 6 and 7 show a modified embodiment of an adjustable hinge which is suitable for attaching doors which abut when closed to a metal frame or door jamb 15'. In doors which abut when closed the frame and the door extend flush, i.e. they lie virtually in the same vertical plane. A bent-away bearing tang 31 is connected to the narrow edge of a door 14 by means of a screw 34. This bearing tang 31 has an external contour which is at least semicircular, and is preferably in the shape of approximately three-quarters of a circle, as can be seen in Figure 8. For securing it against rotation under the weight of the door at least one eccentrically mounted pin 36 is provided; preferably, a plurality of such pins 36 is arranged in a circle in the tang part 30. The bearing tang 31 is bent out sharply at right-angles. The shorter tang part 37 which is bent away relative to the first tang part 30 engages in a slot 39 in the cylindrical bearing part 32. The dimensions of the slot 39 and the tang part 37 which engages in it are such that a play-free sliding seat is provided which allows relative displacement of the shorter, bent-away tang part 37 in the slot 39. A transverse pin 38 is inserted in the cylindrical bearing part 32, penetrating into a bore 40 or recess in the shorter, bent-away tang part 37. This bore 40 or recess is substantially larger than the diameter of the transverse pin 38. The difference in diameter provides the maximum range of adjustment for the shorter, bent-away tang part 37 relative to the bearing part 32. For securing the selected adjustment position there is a locking screw 42 which extends coaxially with the insertable pin 33 and presses against the upper face of the shorter tang part 37. This locking screw 42 is provided at the top with an internal hexagonal recess 43 or a screw-slot so that a relatively large amount of force can be exerted with a suitable tool. The face of the locking screw 42 which rests against the shorter, bent-away tang part 37 is equipped with tapering concentric ribs or pips 49 which provide additional holding against unintentional relative displacement in the selected position. In order to prevent the slit bearing part 32 from being spread apart under the effect of the locking screw 42, a sleeve 45 as shown in Figures 4 and 5 is pushed over the cylindrical bearing part 32. This deep-drawn sleeve 45, preferably produced from thin-walled rust-free metal, lies closely against the cylinder wall of the bearing part 32, thus, virtually without play, or is pressed onto it, after the locking screw 42 has been inserted. Differing from Figure 5, the slot 47 here is rectangular. Access for a tool to the internal hexagonal opening 43 in the locking screw 42 is gained via the opening 46.

The insertable pin 33 shown in Figure 6 engages from the top in the lower hinge part 29 which is inserted by means of two bearing pins 4 in a bearing block 45 in the metal door jamb 15'. This bearing block 45 is welded to the door frame 15'. The two bearing pins 4 which lie spaced out one above the other have no thread and are pushed into corresponding bores 46 in the bearing block 45 and spread apart by a spreading screw 48 so that they are clamped firmly in the two bores 46. In order to prevent these bearing pins 4 from slipping unintentionally out of the bores 46, over part of the length of each of the bearing pins 4 there is a recess 18 so that even if the spreading screw 48 should become loose, the shoulders at the transition to the larger diameter section of the bearing pins prevent them from unintentionally sliding right out.

In order to make the mounting of the hinges on a door or window 14 as simple as possible, it is advantageous to make the bores for the pins 36 and the guide bore 35 for the screw 34 with the same diameter so that they can be produced with the same drill, using a bore-template. The bore 35 thus serves as a guide for the subsequent milling out with a shank cutter to accommodate the tang part 30 which is made approximately as a circular disc. The circular edge 26 thus extends coaxially with the bore 35. Any possible roughness at the milled edge can be covered over with a covering plate 56.

Figure 9 shows the bottom of the insertable pin 33 resting against an adjustment screw 22 screwed into the lower hinge part 29. The corresponding tapped bore 24 extends coaxially with the bore which accommodates the insertable pin 33. Thus, by rotating the adjustment screw 22 the vertical position of the upper hinge part and thus of the door or window connected to it can be adjusted in the mounted state. This allows positional adjustment in three directions, namely, firstly by rotating the supporting pin 5 or displacing the bearing tang 31 relative to the bearing part 32, secondly by adjusting the depth of penetration of the bearing pins 4 in their bores 46, and finally by changing the vertical position of the insertable pin 3 by rotating the adjustment screw 22. A corresponding arrangement may also be used in the embodiments shown in Figures 1—3.

CLAIMS

1. A hinge for adjustably attaching a door or a

window to a frame, of the kind comprising a first hinge part to be connected to the door or window, a second hinge part to be connected to the frame, and an insertable pin which forms the hinge pivot axis, characterised in that both the first hinge part and the second hinge part have adjustment means for adjusting the position of the door or window relative to its frame.

2. A hinge according to Claim 1 and wherein the first hinge part has a supporting pin with a thread, characterised in that a holder for the pin has a through-bore extending transverse to the pivot axis of the hinge, in which bore the head section of the supporting pin is rotatably engaged, in that the head section of the supporting pin is equipped with an internal hexagonal recess, or a screw-slot, for rotating the supporting pin by means of a tool for the purpose of adjusting the position, and in that a tapped bore extends coaxially with the pivot axis of the hinge in which there is a locking screw for securing the position of the supporting pin relative to the pin holder.

3. A hinge according to Claim 2, characterised in that, in its head section, the supporting pin has an annular groove in which a securing pin extending transverse to the locking screw is engaged.

4. A hinge according to Claim 2, characterised in that, in its head section, the supporting pin contains an annular groove in which the leading part of said locking screw engages, and in that there are securing pins, and in particular a sleeve inverted over the pin holder, to prevent said locking screw from rotating out of the annular grooves.

5. A hinge according to Claim 1, characterised in that the first hinge part contains a bearing tang bent away approximately at right-angles, said bearing tang comprising a bearing part having a slot and a bent-away tang part which engages slidably in said slot, in that a locking screw is provided which rests against the narrow face of the bent-away tang part, and in that securing means are arranged in the bearing part, to prevent the tang part and the bearing part from becoming separated when the locking screw is loosened.

6. A hinge according to Claim 5, characterised in that said slot penetrates diametrically right through the bearing part, which is cylindrical, and is open at the end furthest from the insertable pin, and in that a sleeve pushed over the bearing part closely surrounds the outside of the bearing part.

7. A hinge according to Claim 5 or 6, characterised in that the securing means contain a pin which engages in a bore or recess in the tang part, and the difference between the diameter of the pin and the diameter of the bore or recess defines the adjustment range of the bearing part.

8. A hinge according to any one of Claims 5 to 7, characterised in that the bearing tang is made in the shape of the arc of a circle over at least half its circumference, and in that there are eccentrically disposed securing means for securing the bearing tang against rotation.

9. A hinge according to Claim 8, characterised in that at least one pin for securing the bearing tang against rotation and a guide hole bore for a central fixing screw have at least approximately the same diameter so that the bores in the door can be made with the same drill.

10. A hinge according to any one, or more, of Claims 1 to 9, characterised in that the second hinge part has two mutually parallel threadless pins against which there rests a spreading screw, or a locking screw.

11. A hinge according to any one, or more, of Claims 1 to 10 characterised in that the second hinge part is mounted to be below the first hinge part, in that the latter engages via the insertable pin in the second hinge part from above, and in that there is an adjustment screw in the bore in the lower second hinge part, for adjusting the vertical position of the insertable pin.

12. A hinge for adjustably attaching a door or window to a frame constructed, arranged and adapted for use substantially as hereinbefore described with reference to, and as shown in, Figures 1 and 2, 3, 4 and 5, or 6 to 9 of the accompanying drawings.

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ABSTRACT:

CHG DATE=19990617 STATUS=O> A hinge for adjustably attaching a door or window to a frame of the kind having a first hinge part 1 to be connected to the door or window 14, a second hinge part 3 to be connected to the frame 15, and an insertable pin 33 forming the hinge pivot axis, is characterised in that both the first hinge part 1 and the second hinge part 3 have adjustment

means
for adjusting the position of the door or window relative to its frame. Preferably, the first hinge part 1 has a supporting pin 5 with a thread, and the head 8 of the pin 5 rotatably engages in a through-bore extending through a
holder 2 transverse to the pivot axes of the hinge, the head of the pin has an
internal hexagonal recess 7, or a screw-slot, by which the pin can be rotated
by means of a tool for the purpose of adjusting the position, and a tapped bore
extends coaxially with the pivot axis of the hinge which accommodates a locking
screw 11 for securing the position of the supporting pin 5 relative to the pin
holder. The invention provides a hinge with which, after mounting, smooth adjustment of the position of a door or window in its frame is possible in any
easy manner, and without the need to take the door or window off its hinges.
<IMAGE>